

Claims:

1. Process for dividing a glass sheet (10) along a scored line (11) produced in it, characterized in that the glass sheet (10) for the purpose of arching is pretensioned with a scored line (11) located on the convex side of the arch of the glass sheet (10), and that on either side of the scored line (11) only in the area of one end thereof pressure is applied to the side of the glass sheet (10) in which the scored line (11) is located in order to initiate breaking of the glass sheet (10) along the scored line (11).

2. Process as claimed in claim 1, wherein the glass sheet (10) is pretensioned in that the glass sheet (10) is held down on either side of the scored line (11) by suction heads (5) supplied with negative pressure and from the side of the glass sheet (10) opposite the scored line (11) pressure is applied to the glass sheet (10) via a breaking strip (4), the direction of the pressure applied by the breaking strip (4) being opposite the direction of action of the suction heads (5).

3. Process as claimed in claim 1 or 2, wherein pressure is applied to the pretensioned glass sheet (10) in the area of its edge (12) using a pressure tool with two pressure fingers (21) to initiate breaking.

4. Process as claimed in claim 2 or 3, wherein uniform pressure is applied to the glass sheet (10) by the breaking strip (4) over the entire length of the scored line (11).

5. Device for carrying out the process as claimed in one of claims 1 to 4, with a support (2) for a glass sheet (10) to be divided, in which there is a scored line (11), with hold-down devices (5) provided in the area of a gap (3) between the supports (11) and with a breaking strip (4) provided in the gap (3), wherein there is a pressure tool (20) which in the area of one end of the scored line (11)

of the glass sheet (10) applies pressure to one side of the glass sheet (10) in which the scored line (11) is provided.

6. Device as claimed in claim 5, wherein the pressure tool (20) is made essentially fork-shaped with two fingers (21) directed at the glass sheet (10).

7. Device as claimed in claim 6, wherein the fingers (21) are provided on their free ends with bodies (25) of elastic material.

8. Device as claimed in one of claims 5 to 7, wherein the pressure tool (20) can be adjusted in the direction which is normal (arrow 30) to the support surface (2) [of] the glass sheet (10) using a linear motor (23).

9. Device as claimed in claim 8, wherein the pressure tool (20) is located on the piston of the linear motor (23) with a pivoting capacity (24).

10. Device as claimed in claim 9, wherein there is a spring (26) which keeps the pressure tool (20) in its neutral position.

11. Device as claimed in one of claims 6 to 10, wherein the fingers (21) of the pressure tool (20) are adjustably attached to a crosspiece (22).

12. Device as claimed in one of claims 5 to 11, wherein the devices for holding down the glass sheet on the support surface (2) are suction heads (5) provided on either side of the gap (3) between the supports (2).

13. Device as claimed in one of claims 5 to 12, wherein the pressure tool (20) can be adjusted in the direction of the scored line (11) and of the gap (3) between the supports (2).

[AMENDED PAGES]

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Process and device for breaking scored glass sheets

The invention relates to a process with the features of the introductory part of the claim 1.

The invention furthermore relates to a device with which glass sheets, after they have been scored, can be broken.

Devices for breaking glass sheets are known from US-5 857 603 A (= EP 0 564 758 A) and from US- 5 165 585 A (=EP 0 457 751 A).

The problem in the known devices for breaking glass sheets (breaking tables) is that breaking of thick glass sheets, therefore glass sheets with a thickness of for example more than 8 mm, regardless of whether it is flat glass or laminated glass with at least one thicker glass sheet, is a problem. It is particularly problematical if with the known devices narrow strips are to be separated from these glass sheets or laminated glass panes.

EP 1334953 A describes a process for cutting of glass, the glass surface in the area of the desired cutting line being scored for initiating a crack and then a load is to be applied to the glass such that in the area of the scored line the break occurs, the load being applied such that in the area of the scored line slow crack propagation takes place and leads to the break.

AT 399 144 B discloses dividing glass sheets along scored line by bending the glass sheet using a pressure tool with two pressure elements and one abutment such that the scored line lies on

the outside of the curved glass sheet. Bending of the glass sheet starts from one edge on the end of the scored line and bending of the glass sheet is continued along the scored line. In order to support propagation of the break, there is at least one cam which is located at a distance from the abutment and which engages the glass sheet from underneath and raises it off the support.

EP 0 585 694 A shows a device for dividing glass in which there are means which work independently of one another for arching a scored glass sheet until it breaks.

The object of the invention is to develop the known breaking processes such that even thick glass sheets can be easily broken.

This object is achieved as claimed in the invention with a process which has the features of claim 1.

To the extent the device is affected, the object underlying the invention is achieved with the features of the main apparatus claim.

Preferred and advantageous embodiments of the process as claimed in the invention on the one hand and the device as claimed in the invention on the other hand are the subject matter of the dependent claims.

Since in the process as claimed in the invention a glass sheet in the area of its scored line is pretensioned by holding it down on either side of the scored line and by applying pressure to the side opposite the scored line

Claims:

1. Process for dividing a glass sheet (10) along a scored line (11) produced in it, in which the glass sheet (10) is arched by holding it down on either side of the scored line (11) and by applying pressure to the side of the glass sheet (10) opposite the scored line (11) over the entire length of this scored line (11) with a scored line (11) located on the "convex" side of the glass sheet (10), characterized in that the glass sheet (10) is pretensioned by arching with a scored line (11) located on the convex side of the arch of the glass sheet (10), and that breaking of the glass sheet (10) pretensioned in this way is initiated along the scored line (11) by pressure being applied on either side of the scored line (11) only in the area of one end of the scored line (11) to the side of the glass sheet (10) in which there scored line (11) is provided.

2. Process as claimed in claim 1, wherein the glass sheet (10) is pretensioned in that the glass sheet (10) is held down on either side of the scored line (11) by suction heads (5) supplied with negative pressure and from the side of the glass sheet (10) opposite the scored line (11) pressure is applied to the glass sheet (10) via a breaking strip (4), the direction of the pressure applied by the breaking strip (4) being opposite the direction of action of the suction heads (5).

3. Process as claimed in claim 1 or 2, wherein pressure is applied to the pretensioned glass sheet (10) in the area of its edge (12) using a pressure tool with two pressure fingers (21)) to initiate breaking.

4. Process as claimed in claim 2 or 3, wherein uniform pressure is applied to the glass sheet (10) by the breaking strip (4) over the entire length of the scored line (11).

5. Device for carrying out the process as claimed in one of claims 1 to 4, with a support (2) for a glass sheet (10) to be divided, in which there is a scored line (11), with hold-down devices (5)

provided in the area of a gap (3) between the supports (11) and with a breaking strip (4) provided in the gap (3) wherein there is a pressure tool (20) which in the area of one end of the scored line (11) of the glass sheet (10) applies pressure to one side of the glass sheet (10) in which the scored line (11) is provided.

6. Device as claimed in claim 5, wherein the pressure tool (20) is made essentially fork-shaped with two fingers (21) directed at the glass sheet (10).

7. Device as claimed in claim 6, wherein the fingers (21) are provided on their free ends with bodies (25) of elastic material.

8. Device as claimed in one of claims 5 to 7, wherein the pressure tool (20) can be adjusted in the direction which is normal (arrow 30) to the support surface (2) [of] the glass sheet (10) using a linear motor (23).

9. Device as claimed in claim 8, wherein the pressure tool (20) is located on the piston of the linear motor (23) with a pivoting capacity (24).

10. Device as claimed in claim 9, wherein there is a spring (26) which keeps the pressure tool (20) in its neutral position.

11. Device as claimed in one of claims 6 to 10, wherein the fingers (21) of the pressure tool (20) are adjustably attached to a crosspiece (23).

12. Device as claimed in one of claims 5 to 11, wherein the devices for holding down the glass sheet on the support surface (2) are suction heads (5) provided on either side of the gap (3) between the supports (2).

13. Device as claimed in one of claims 5 to 12, wherein the pressure tool (20) can be adjusted in the direction of the scored line (11) and of the gap (3) between the supports (2).